



UNITED STATES NAVY

MEDICAL NEWS LETTER

Editor - Captain L. B. Marshall, MC, USN

Vol. 21

Friday, 20 February 1953

No. 4

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Fractures Involving the Distal Epiphysial Cartilage of the Radius

In children, fractures involving an epiphysial cartilage are capable of causing a disturbance of growth with resultant deformity and disability. If the parents are not forewarned of this possibility, unfortunate misunderstandings may occur as the deformity and disability become apparent clinically long after the fracture has healed.

A series of cases of epiphysial cartilage injuries was recently studied in an effort to determine the results of such injuries. Fractures which involved the distal radial epiphysial cartilage were the most common epiphysial cartilage injury due to trauma. Certain factors were found to predispose to this frequency of occurrence and to the ease of its recognition. These factors are:

(a) A cartilaginous epiphysis is a "weak spot" in any bone.

(b) The distal radial epiphysial cartilage is one through which are transmitted forces from the hand and carpus to the proximal portion of that extremity.

(c) As this epiphysial cartilage is located in the upper extremity, it is inherently subject to more destructive trauma in active children than is any epiphysis of the lower extremity.

(d) The distal radial epiphysis has a superficial location. This results in an easier clinical examination. Acute post-traumatic linear tenderness or minimal deformity is more readily detected than in the case of injured epiphyses covered by considerable amounts of soft tissue.

(e) Anatomically, the proximal end of the distal radial epiphysis is concave; the distal radial diaphysis is convex. Any force applied to the upper extremity becomes a shearing force at the epiphysial-diaphysial junction unless, by chance, the forces follow the axes of the opposing curved surfaces. The normal dorsal bow of the radial diaphysis aids in transmitting the forces through the limb, but a supination-pronation force can disrupt the delicate balance at the epiphysial-diaphysial junction.

(f) The distal radial epiphysial cartilage is exposed to trauma for a period of from 16 to 18 years after which the epiphysis normally fuses to the diaphysis. This is at least as long as the epiphysis of any long bone remains active.

The most common injuries are type I in which the fracture line parallels the epiphysial cartilage. As the epiphysis is displaced, a triangular chip fracture of the metaphysis occurs on the side of the shaft toward which the epiphysis is displaced. A type I fracture may display varying degrees of displacement of the entire epiphysis, depending on the strength and direction of forces in action at the time of injury.

A rare injury is the type II fracture in which the fracture line extends from articular cartilage to the epiphysial cartilage. The diaphysis is uninvolved, and there is little if any displacement of epiphysial fragments.

The third type of injury displays a fracture extending from the articular cartilage across the bony epiphysis and epiphysal plate into the diaphysis. Displacement is usually minimal, but a type III fracture may display varying degrees of displacement of the entire epiphysis or of the distal fragments as in type I.

Thirty-four consecutive cases of fracture involving the distal radial epiphysal cartilage have been reviewed. The average age at the time of injury was 13 years; there were 26 boys and 7 girls affected, 1 boy having a bilateral injury. Thirty-three cases showed dorsal displacement of the distal epiphysis; 1 epiphysis was displaced volarward. Displacement was recorded as 100% if the bony epiphysis was completely displaced from the diaphysis. There were 27 cases with a type I fracture and 7 with a type III. There is no apparent reason for the absence of type II injuries unless the size of the radial epiphysis and its location are such that appropriate forces to produce this injury cannot come into play on it.

Some fracture of the metaphysis occurred in all cases, with generally a triangular fragment produced; the size of this fragment varied, tending to be somewhat smaller in the type III fractures.

Treatment consisted of manipulative reduction when the epiphysal fragment was displaced. Roentgenograms to show the position of the triangular metaphysal fragment and comparable views of the normal wrist can be used to check completeness of reduction. Immobilization of the fragments was maintained for an average of 5 weeks in a long-arm plaster cast. The cast was discontinued when union was present on clinical examination, when roentgenograms disclosed bony union of the triangular metaphysal fragment to the diaphysis, and when any associated fractures were united on clinical or roentgenographic examination.

It is imperative that the parents and the patient be cautioned about the possibility of a growth disturbance of the distal radius as soon as the diagnosis of epiphysal injury is established. This warning should be repeated when immobilization is discontinued. The families should be requested to return the patient at 3- to 4-month intervals for roentgenographic study of both wrists. These visits should be continued for 12 months in most cases or until distal radial and ulnar epiphyses are fused. (Postgraduate Med., Jan. 1953, W. E. Dotter)

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Navy Medical School, National Naval Medical Center, Bethesda 14, Maryland, giving full name, rank, corps, and old and new addresses.

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Subperitoneal Hemorrhage

Subperitoneal hemorrhage encountered at operation, or observed at autopsy, has usually been reported as an uncommon and puzzling condition in which loss of blood had not been suspected.

In 1941, after experience with 4 cases and review of the literature, Cushman and Kilgore described a series of signs and symptoms which it was believed would lead to clinical diagnosis in many instances. The initial symptom of the syndrome is dull, constant abdominal pain, sudden in onset, and usually accompanied by nausea. Vomiting aggravates discomfort instead of bringing relief. Continued bleeding increases the intensity of the pain, owing to the gradually enlarging hematoma confined between leaves of a mesentery or beneath visceral peritoneum. There is apprehensive stirring and turning in vain search for a position of comfort. When bleeding stops, the pain gradually subsides, only to return on resumption of hemorrhage, which may be incited by eating, catharsis, retching, or effort. Although bleeding doubtless frequently stops and does not recur, these episodes of subsidence and return of pain, indicative of intermittent bleeding, have been repeatedly noted in reports of cases of proved subperitoneal hemorrhage. Several episodes may occur within a few hours, or the period between them may be several days.

Physical examination early in this phase before peritoneal rupture seldom reveals more than local tenderness without muscle rigidity. Later, if there has been considerable bleeding, the mass of the hematoma (in some locations) may be felt on careful palpation.

Normal pulse and blood pressure often give a false sense of security, even with rapid loss of blood in a short period of time. If hemorrhage is suspected, rapidly raising the patient to an upright position may cause definite increase in pulse and drop in pressure—the earliest objective evidence of acute loss of blood. Determination of the erythrocyte content of the blood and hematocrit estimations are also of little diagnostic value in the first few hours, but are invaluable as a baseline, because progressive anemia is confirmation of the clinical diagnosis.

If recurrences of bleeding are sufficiently far apart, successive drops in erythrocyte content with gradual recovery between incidents supplies dramatic proof of the diagnosis.

If hemorrhage continues, slowly or rapidly, with or without remission, the overlying peritoneum ultimately ruptures. This is heralded by sudden excruciating exacerbation of pain, with shock which is often profound and frequently fatal. If the patient survives this, early abdominal examination reveals diffuse soreness and exquisite rebound tenderness without muscle guarding, which gradually merges into increasing rigidity with distention—the picture of hemoperitoneum with peritonitis and its concomitant adynamic ileus.

Onset is frequently precipitated by trauma or strain—often so minor in character as to seem insignificant. The source of bleeding is a branch of the superior mesenteric artery in nearly 75% of cases. Fifty of the seventy-one patients were male. Obvious vascular disease was present in 42% and history of trauma or strain was noted in 18%.

Subsidence and recurrence of pain, progressive anemia, the appearance of a mass, and secondary collapse imply sufficient duration of time to permit recognition of these phenomena. Because the period of observation in these cases was terminated by operation in some instances and by either death or ultimate recovery without operation in others, they have been divided into 4 groups.

Patients in the first and second groups were operated upon in the hematoma and the hemoperitoneum phases, respectively. The third group was made up of patients who died without surgical intervention, and the fourth of those who recovered without operation. The average duration of symptoms was 3 days in the first group, 10 days in the second, and 19 days in the group of those that died. No attempt was made to calculate duration of time before diagnosis in those who recovered.

The proportion of cases in which history of subsidence and recurrence of pain was obtained was in direct ratio to the duration of symptoms—28% in the first group, 50% in the second, 56% in the third, and 59% in the cases in which there was spontaneous recovery.

Erythrocyte count, hemoglobin value, or hematocrit estimation was recorded in only 39 of the cases, and was repeated in all but 13. The erythrocyte content when first determined was above 4 million cells per cu. mm. in 18 cases (46%), and less than 3 million in 6 cases (15%). Progressive loss of blood was demonstrated in all of the 13 cases in which repeated counts were made.

A palpable mass was recorded in 8 cases. In 75% of those patients known to have free blood in the abdomen, the onset could be identified by sudden increase in pain followed by collapse.

It seems evident that these signs and symptoms are constant in a substantial percentage of cases, and that the syndrome of subperitoneal hemorrhage can lead to clinical diagnosis provided the possibility of bleeding is considered. (California Med., Jan. 1953, G. F. Cushman)

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Modern Management of Inguinal Hernia

Four-fifths of all hernias, and more than 90% of those occurring in males, are inguinal. The draft records for World War II show that more than 2% of the men examined had these defects. While the majority of femoral hernias occur in women, there are still more inguinal than femoral hernias in women.

Too many family physicians, and even some surgeons, have, in the past, advised against the operation for inguinal hernia. Such advice given to a person with a small early hernia will possibly lead to his having a large one sooner or later. Then the operation will be more difficult, and the chance of cure not so good. Why not give him a chance to have a simple operation while the hernia is small and easy to cure?

Also, advice against operation to a patient who has a large hernia is apt to lead to something worse. It will almost invariably become larger, and irreducibility, incarceration, or strangulation may supervene, which not only reduces the chance of a permanent cure but also increases the mortality rate.

Advice against, or the deferring of, the operation in the aged is more serious than in younger people. Almost invariably as old age advances, the patient's tissues deteriorate, the hernia becomes worse, becomes more difficult to retain by a truss, and too often incarceration or strangulation occurs. Emergency surgery in the aged is often disastrous. Strenger, Cutler, and others have recently shown that aged persons tolerate elective surgery just about as well as younger people, while the mortality rate for emergency surgery in this group is around 50%. The lesson is then clear: The operation should be performed as an elective procedure before any complication requiring emergency surgery supervenes.

Of the modern operations for hernia repair, the Halsted, Bassini, Ferguson, and the Cooper's ligament repair are in greatest vogue. In the first 3, the conjoined tendon is sutured to Poupart's ligament. (When the term "conjoined tendon" is used it is meant to include not only the conjoined tendon proper but also the internal oblique muscle and the transversalis fascia just lateral to it.) The main difference between the 3 operations is in the location of the cord with regard to the conjoined tendon. In the Halsted operation the cord is transplanted subcutaneously, in the Bassini operation the cord is transplanted between the aponeurosis of the external oblique and the conjoined tendon, and in the Ferguson operation the cord is left in its bed and the conjoined tendon sutured to Poupart's ligament over it. In the Cooper's ligament operation the conjoined tendon is sutured to Cooper's ligament, instead of to Poupart's ligament, and the cord may be placed either in the Bassini position or the Halsted position. In the Ferguson-Andrews operation, the cord is of course left in its bed, but the flaps of the aponeurosis of the external oblique are overlapped instead of having their edges simply approximated, as was done in the original Halsted and Bassini operations.

A great many follow-up reports on inguinal hernia indicate that the best results in hernia repair are not necessarily due to the type of operation used, but to the skill of the surgeon performing the operation. Excellent results may be obtained by any of the standard methods mentioned. The failure is often due to treating the operation for hernia in an offhand or slipshod manner. Such methods are bound to result in failure. It cannot be too

strongly stressed that successful hernia repair is the result of infinite pains and close attention to every detail of the operation as well as to the post-operative care. Failure to recognize this principle is bound to result in an unduly high recurrence rate.

One of the most important periods in the postoperative care is the period immediately after the operation is finished. The author is convinced that many recurrences develop even before the patient leaves the operating room. These are due to straining under anesthesia, and thereby breaking sutures. During an operation the author saw the patient strain violently and break heavy silk sutures which had already been placed. Fortunately the wound had not been closed and the damage could be repaired. However, when the patient strains after the wound has been closed, the surgeon is unaware of any damage that may be done.

A great many anesthetists believe that the patient should be practically awake by the time the operation is over. When that is the case, the author prefers his patients to have a large dose of morphine before leaving the operating room, so they will not start straining while they are insensitive to pain. By the time the morphine has worn off, the pain will keep them from straining and doing themselves damage.

Some anesthetists at the end of an operation, with the patient almost awake, begin to suck out the air passages and thereby induce violent straining and coughing. Nothing could be worse for the suture line. The author much prefers to have his patients kept beyond the straining stage until they get back to their rooms, and then to have morphine as soon as they start moving around in bed.

Coughing, vomiting, and straining at stool put a tremendous strain on the suture line. Coughing can be kept to a minimum by sedatives and inhalations. Vomiting can be effectively eliminated by Dramamine and the Levin tube. Straining at stool can be prevented by mild cathartics or one of the gum substances which forms bulk and causes the patient to have large, soft, easy stools.

The author strongly believes in tight firm dressings which firmly support the entire lower abdominal wall. Not only are patients more comfortable with this type of dressing, but their wounds are supported in case of any inadvertent straining.

Early ambulation is a great adjunct to the postoperative care. The author prefers to get his patients up the same day, and many of them like the idea. He does not believe in pushing the unwilling ones too hard however. They void better if they are out of bed. It may be noted that the strain of getting out of bed is less than the strain of getting on a bedpan. Being up and around improves the circulation and keeps the patients in positive nitrogen balance.

Early ambulation however does not mean merely sitting in a chair all day. For the first few days after operation, the patient should either be lying almost flat or walking around. His sitting periods should be brief so as not to flex the veins in the groin and predispose to thrombosis. (GP, Jan. 1953, A. R. Koontz)

Pulmonary Hydatid Disease

The term "simple" hydatid disease is used by the authors to indicate that the parasite itself is intact; but a simple cyst may, upon occasion, cause suppuration in the lung. A "complicated" cyst is one in which the hydatid has ruptured and this accident may or may not be associated with pneumonitis. "Primary" hydatid disease indicates that the cyst in question had developed from an embryo derived directly from a dog. "Secondary" hydatid disease means that a primary cyst lodged elsewhere had ruptured and caused new cysts to develop by embolism or by direct spread. "Daughter" cysts are cysts which grow within the cavity left by spontaneous evacuation or inadequate surgical removal of a parasite.

The present series was comprised of 71 patients who had at least 94 cysts in their lungs. Forty of these patients were males and 31 females. About 10% contracted their disease outside the British Isles.

From the histories of those patients who contracted hydatid disease in the British Isles certain points may be deduced. There are districts, and even villages, in which the risks of infestation are high, whereas throughout most of the country there is no risk. It cannot be said that all cases occurred in backward or isolated rural areas, for a number of patients have not lived in the country and presumably acquired the disease from dogs in towns. In this connection the present popularity of greyhound racing and whippet coursing may be relevant; and in some areas the regulation of abattoirs is so lax that scavenger dogs can easily get access to infected offal. About 10% of the total number of patients gave no history of having been especially connected with dogs and about 25% had not lived in the country.

The oldest patient to be affected was a man, aged 62, who had a simple cyst which was successfully treated by lobectomy; the youngest was a boy, aged 3 years and 11 months, who was cured by removing a simple cyst intact.

A hydatid cyst, living in the lung of a human being, can only produce one of two end results. Either the cyst must die or be removed surgically, or the patient must ultimately suffer from serious and, possibly, fatal disease. A dead, retained cyst is unlikely to prove an innocuous foreign body. The aim of treatment must therefore be removal of every cyst as soon as the diagnosis has been made.

None of the recent literature convincingly suggests that lung cysts should be treated medically or conservatively. Some physicians have tried to avoid operation by aspirating simple cysts, after inducing pleural adhesions, and injecting acid pepsin into the cavity containing the ruptured membranes. The rationale is said to be that the enzymes fragment the laminated membrane so that it can be coughed up. This method seems to be hazardous, uncertain, and is based upon an incorrect assumption, namely that acid pepsin will digest the laminated membrane.

The real and fundamental objection to medical or expectant treatment is that there is no certain way of getting all the disintegrating laminated mem-

brane out of the cavity of the lung, and no possible way of assessing the completeness of spontaneous expectoration—except by observing the clinical course and studying serial radiographs. Although a simple cyst may be relatively harmless to the lung, a suppurating cyst is certain ultimately to set in motion the whole train of destructive pathologic reactions which can be induced by a chronic lung abscess. These changes cannot be influenced by antibiotics or other drugs because there is a foreign body retained in the cavity. If a patient expectorates a cyst, and is cured, it can be assumed that the membranes have been totally voided.

In the management of simple hydatid disease 3 objectives must be achieved: the parasite must be removed, the wound and adjacent pleural cavity must not be contaminated with live hydatid elements, and some provision should be made to deal with the "empty sac" which remains in the lung.

Simple hydatid cysts should be removed from the lungs as soon as they are diagnosed. In the past this was not always considered to be practicable, because it was thought unsafe to incise through the lung to reach a deeply placed hydatid. Recent experiences with such operations as segmental lobectomy have shown that by keeping to the intersegmental planes it is easy to expose "tumors" in the lung, however deeply they may be placed. Thus there is no longer any need to defer operation on the grounds that the hydatid is situated deep in the lung. Nor should operation be deferred in the remote hope that the whole parasite may be expelled by cough; for, at best, this event is uncertain and dangerous. As far as the authors can ascertain, nobody has, as yet, produced figures to show all the dangers of awaiting spontaneous rupture; but they are certainly greater than those of thoracotomy by modern methods. Moreover, expectant treatment may fail or may lead to progressive pulmonary suppuration, whereas a cure can be almost guaranteed by surgery.

Until recently the argument concerning the precise details of how to get the simple parasite out of the lung has ranged about the relative merits and safeties of a two-stage operation (in which the lung in the vicinity of the parasite was marsupialized to the chest wall) and secondly, of removing the hydatid, after puncture or aspiration, across the open pleural cavity. The authors submit that both operations are bad and should now be given up. They were adopted at a time when the hazards of thoracotomy, and particularly those of the possible postoperative complications, were paramount. These hazards included tension pneumothorax, acute pyopneumothorax, acute anaphylaxis, and chronic empyema. The risk of contaminating the exposed tissues is great whether the cyst is punctured or aspirated. Any spillage of hydatid fluid is absolutely undesirable.

Another operation which the authors advocated and used in the management of simple cysts was lobectomy. This is now seldom used even in the management of large hydatids. In the past the authors argued that large hydatid cysts, being space occupying lesions in a lobe, must inevitably destroy

that lobe by pressure upon, and distortion of, adjacent bronchi. It is now realized that even large hydatids may do remarkably little permanent damage to the lung and that simple removal practically always results in restitution to normal in a remarkably short time. This point has been emphasized by Australian colleagues from the first and it was they who urged the authors to restrict lobectomy to those cases of simple hydatid disease in which, at thoracotomy, it was quite obvious that permanent and irretrievable changes had occurred in the affected lobe. In practically all patients with simple pulmonary hydatid disease it suffices to remove the parasite. (Brit. J. Surg., Nov. 1952, N. R. Barrett and D. Thomas)

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Carcinoma of the Breast

The approach to the diagnosis of cancer of the breast usually has omitted the x-ray examination. Now, with improved x-ray technics, adequately checked against pathologic findings, a reconsideration of the x-ray examination as a routine procedure in the diagnosis of early mammary carcinoma is warranted.

A lateral and a tangential view of each breast, with the patient in either the erect or the recumbent position, probably are adequate for survey purposes, but an additional "spot film" with a small cone in either the lateral or tangential direction is required for the examination of the diseased breast. The application of a small lead shot to the skin over the lesion aids the radiologist in selecting the proper area for particular scrutiny.

Nonscreen films are used. Type A industrial fine-grain films are slightly superior but require more critical control of exposure factors. The breast is lightly compressed between the cone and the film. A fine-focus tube is used and the film-target distance varies. The optimum factors for an adult fatty breast are: 30 to 32 kv. and 200 to 400 ma.; for a dense compact breast free of fat, the kilovoltage is raised to 36 to 38, the other factors remaining constant.

For the lateral views of the breast, a special cone is used. One sector is cut out so that, when the cone is in place, the cut-out sector allows compression of the breast between the film and cone without interference by the chest wall. Shorter cones with smaller apertures are used for the spot-film technic. If the film can be brought close to the lesion in the breast, a film-target distance of 30 cm. is chosen; if the lesion cannot be placed close to the film, then a film-target distance of 75 cm. is used. Changes in film-target distance, necessitated by the apparatus and the thickness of the breast, must be compensated for by appropriate changes in the milliamperage. The factors suggested for spot-film exposures are: 30 kv. and 25 ma. for each centimeter of tissue at 30 cm. film-target distance. Compression of the tumor-bearing portion of the breast can be effected by using a thin plastic

sheet between the cone and the breast. If the tumor lies against the chest wall, gentle traction on the nipple will sometimes bring it forward into position for a good spot-film exposure.

The primary diagnostic x-ray criteria of malignancy are as follows: (a) The size of the tumor is less in the film than that determined by palpation. (b) The radiopacity of a malignant tumor is apt to be greater than that of the surrounding tissues, and the more fat in a breast, the greater is the difference in contrast between the tumor and the perifocal structures. The authors confirmed Leborgne's report, concerning the presence of punctate calcifications in and around many malignant tumors. (c) The margins of a malignant tumor are irregular, tentacled, and spiculated. (d) The perifocal tissues in the tumor bed of a malignant growth are blurred and distorted. The secondary x-ray criteria of a malignant tumor are: (e) Alterations in the position of the nipple. (f) Local or diffuse thickening of the skin, sometimes with retraction. (g) Accentuation of the trabeculae, especially if the malignant process is diffuse and widely invasive. (h) Increased vascularity in the parenchyma and in the subcutaneous fat layer.

The differential diagnosis and the question of biopsy in view of the x-ray findings are discussed. (Radiology, Jan. 1953, J. Gershon-Cohen and H. Ingleby)

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Paracarinal Biopsy

A biopsy specimen immediately lateral to the carina should be taken in all cases of bronchoscopically demonstrable primary carcinoma of the lung considered for operation.

The paracarinal biopsy should be performed at the time of the first bronchoscopy in the case of an abnormality lower in the bronchial tree suspected of being carcinoma. This should be done whether the mucous membrane adjacent to the carina appears normal or not.

Resection of the carina and trachea may be feasible in some cases of gross paracarinal involvement by a neoplasm that arises in that location.

A positive paracarinal biopsy specimen of mucous membrane that appears normal indicates the presence of submucosal lymphatic spread and this serves as a contraindication to any type of pneumonectomy performed with a view to cure.

One hundred fifty-four patients with primary carcinoma of the lung were subjected to biopsy of the mucous membrane of the main bronchus within 1 cm. of the carina. In 30 of these some gross abnormality was visible in this region, but for only half of them did the microscopic examination disclose neoplastic cells. In 16 additional patients the mucous membrane in the paracarinal region appeared grossly normal, yet microscopic examination disclosed submucosal lymphatic extension from the tumor, which originated more distally.

Of the patients, 106 appeared to be good subjects for cure by pneumonectomy before the results of the paracarinal biopsy were known. Of these, 17, or 16% showed microscopic evidence of invasion of the paracarinal region by the growth. A positive result from paracarinal biopsy was obtained regardless of the type of abnormality noted by the bronchoscopist, but no biopsy of the paracarinal region was positive when the bronchus leading to the tumor appeared normal. Hidden lymphatic involvement by carcinoma near the carina occurred as frequently in patients with symptoms of less than 3 months' duration as in those who had had symptoms for a longer period. No complications resulted from the procedure. (Arch. Surg., Dec. 1952, C. B. Rabin, I. J. Selikoff, and R. Kramer)

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Studies With Intravenous Gitalin

Intravenous administration of gitalin, a glycoside of Digitalis purpurea, was studied in 16 ambulatory patients with various degrees of congestive failure, and in 4 control subjects. Clinical and electrocardiographic observations are reported. Comparison with strophanthin, lanatoside C, and digitoxin was made.

The initial intravenous dose was found to be between 2.5 and 3 mg.; the total digitalizing dose, from 5 to 6 mg. Two injections at 24-hour intervals were sufficient to digitalize the average ambulatory patient. Maintenance was obtained with 2 weekly injections of 2.5 mg. Administration of the drug caused no appreciable side effects.

The changes of the heart rate, of the Q-T interval, of the S-T interval, and of the T wave caused by gitalin are similar to those due to other digitalis glycosides. Persistence of S-T and T-wave changes were utilized for a comparative study between the various glycosides. This revealed that gitalin is eliminated within 3 to 4 days and that its rapidity of elimination is between that of strophanthin and that of lanatoside C, although nearer to the latter.

The wide margin of safety, the relative lack of side effects, and the rapid elimination indicate that gitalin is the drug of choice in cardiac failure caused by rheumatic carditis or coronary heart disease, and in cases with ectopic ventricular rhythms. Ambulatory patients need frequent checking because of the rapid elimination of the drug. (Am. Heart J., Jan. 1953, O. M. Haring and A. A. Luisada)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

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Acute Infectious Lymphocytosis

Infectious lymphocytosis, originally thought to be a variant of infectious mononucleosis, was first described and named by Smith in 1941. Its chief characteristic is a benign, relative increase in the number of the small mature lymphocytes in the peripheral blood and in the bone marrow.

Repeated bacterial and viral studies have revealed no causative agent. Data available suggest an infectious etiology, with an incubation period of from 12 to 21 days. The degree of communicability and immunity has not been determined. The disease was originally reported only from the United States and England, but subsequent cases have been reported from Uruguay, Finland, and Switzerland. Apparently, there is no racial predilection or seasonal incidence.

The earlier reports attributed few or no symptoms to the disease. More recently, however, various complaints have been noted, along with diverse physical findings. The majority of patients exhibit manifestations of infections of the upper respiratory tract, but no specific or similar pathogenic organisms have been cultured. The clinical course may range from mild or no symptoms through a moderate to a severe course.

Abdominal pain has been frequently reported as a symptom of this disease, the character varying from mild and transient to severe enough to simulate a surgical emergency, although the latter cases are rare. The pain is usually colicky and periumbilical, and the abdomen remains soft. The incidence of abdominal pain in association with throat infections in children is well known. However, mesenteric or retroperitoneal lymphadenitis is usually associated with less rise in the total white blood cell count and more neutrophilic response than is seen in infectious lymphocytosis. Vomiting is not uncommon, and associated diarrhea has been reported.

In recent years several cases with symptoms and signs referable to the central nervous system have been noted. Thelander and Shaw described encephalitic manifestations in 2 cases of what they believed was infectious mononucleosis but would more probably at this time be diagnosed as infectious lymphocytosis. The resemblance to poliomyelitis has also been observed. A slight spinal fluid pleocytosis has been noted. There were no meningeal symptoms or signs in the cases reported, and no lumbar puncture was performed. An extensive morbilliform rash was observed in 1 adult patient.

In some of the cases reported as epidemics of the disease from children's institutions, the patients have been completely asymptomatic. In most cases it has been diagnosed on routine hematologic studies. Thus, any clinical manifestations present are usually those frequently observed in many other diseases of childhood—fever, signs of upper respiratory tract infection, abdominal signs, and occasionally neurologic manifestations.

The sole characteristic laboratory sign is the hyperleukocytosis, the increase being practically confined to the lymphocytic series. Meyer reports the range of the white blood cell count to be from 22,500 to 120,000. Most

authors have recorded a count of about 40,000. The lymphocytic elements range from 62 to 97%. The lymphocytes are small and mature-appearing, with a thin rim of cytoplasm. The leukocytosis usually lasts from 2 to 5 weeks in children, but persistence for 7 months has been reported. The erythrocytes, hemoglobin, and platelets are not disturbed.

Several conditions occurring in childhood, and producing a leukocytosis, chiefly of the lymphocytic elements must be considered in the differential diagnosis.

Infectious mononucleosis is common in children and may be confusing. In fact, some of the earlier cases of infectious lymphocytosis were reported as atypical examples of infectious mononucleosis. The clinical picture may be similar although the patient with infectious mononucleosis generally shows severe throat involvement, fever, marked malaise, generalized lymphadenopathy, splenomegaly, and occasionally rash and jaundice. The main distinguishing features of infectious mononucleosis are the presence of large, abnormal lymphocytes or mononuclear cells and a positive heterophil-antibody agglutination; in infectious lymphocytosis, the lymphocytes are usually small and mature-appearing in contrast. The comprehensive reports of Smith and Bernstein describe the histologic features of the lymphocytes in infectious mononucleosis. In the cases presented, no abnormal cells were observed, and the heterophil-antibody reaction was negative on two occasions in each patient.

Pertussis may produce a marked lymphocytosis. Leukocytosis of the same degree caused by infectious lymphocytosis is usually seen only in severe pertussis, in which the clinical symptoms are characteristic.

In the early stages, lymphatic leukemia, especially the acute type, may be suggested. Occasionally, viral encephalitis or poliomyelitis simulates infectious lymphocytosis. Typhoid fever, tuberculosis, and brucellosis can be ruled out by appropriate tests. Lymphocytosis occasionally occurs in infections ordinarily accompanied by neutrophilic increase. Postinfectious lymphocytosis after influenza and other infections in children has been encountered. With the recent interest in virology it is anticipated that more will be learned about certain viral diseases, including the leukocytic response in such infections.

In the patient with clinical symptoms, symptomatic treatment is indicated. Control of fever and management of respiratory or any other symptoms present should be carried out. Chemotherapy or antibiotics apparently do not alter the course of the disease. (New England J. Med., Jan. 15, 1953, Capt. H. D. Riley, Jr., USAF (MC))

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Evaluation of Amodiaquin (Camoquin) in the
Treatment of Relapsing Vivax Malaria

This study is based on the treatment of 100 consecutive patients with relapsing Plasmodium vivax malaria at the U.S. Naval Hospital, Philadelphia, Pa., admitted from November 1950 to December 1951. The authors' statistical conclusions are based upon follow-up observations to 1 July 1952. Almost all of the cases in this series were members of the Armed Forces who had recently returned from the Korean Theater of operations. The time interval between leaving Korea and onset of the first malaria symptoms varied widely; the shortest time interval was 2 weeks and the longest, 11 months.

Approximately 75% of these patients received suppressive therapy with 0.5 gm. of chloroquin once weekly while in the malarial zone. However, many of the patients were unable to take the drug at the recommended interval, because of the exigencies of their duties or because of their own neglect. Twelve percent of this group gave a history of having had previous malarial attacks which were treated with chloroquin or by other antimalarial drugs. An average of 5.36 months had elapsed since the previous attack in this group, the shortest interval was 1 month and the longest, 12 months.

The majority of the patients developed symptoms within a week or a few days prior to admission. The predominant complaints were: intermittent high fever, chills, malaise, headache, and anorexia. Many also complained of nausea and vomiting. Physical examination for the most part was negative except for splenomegaly present in 34% and pharyngitis in 20% of patients. Hepatomegaly, herpes labialis, bronchitis, and lymphadenopathy were also present in a small percentage of patients.

Laboratory studies revealed a moderate anemia in 32% of the cases; leukopenia in 30%; lymphocytosis in 29%; eosinophilia in 7%; monocytosis in 31%; and a positive blood Kahn test in 13%. Stool examinations for ova and parasites were done on 50 cases of this group; 8 of these (16%) had Ascaris lumbricoides infestation. Only 1 case had hookworm; no other parasitic infestations were noted.

When malaria was suspected because of the presenting symptom complex, the following regimen was adopted. Thick and thin malaria smears were taken from each patient. If the smear was positive for Plasmodium vivax, the patient was admitted to the hospital and assigned to a ward in which all malaria cases were treated. Intercurrent relapse malaria was discovered in some of the patients who were in the hospital for other conditions. These were brought to the authors' attention and followed by them during their hospital stay on other wards.

The temperature was taken 4 times daily; blood smears (thick and thin) were taken twice daily, at 8 a. m. and 8 p. m., until 2 consecutive days of negative smears were obtained. Additional laboratory studies including urinalysis, complete blood count, Kahn and Kolmer tests, a stool examination, and any other tests that were warranted were performed.

When the diagnosis was established, a single dose of Camoquin of 10 mg. per kilogram body weight was given. In the majority of cases this ranged from 600 to 800 mg. or 3 to 4 tablets.

With Camoquin all clinical symptoms were controlled in 24 to 48 hours, temperature returned to normal on an average of 22.5 hours, and parasitemia disappeared in 30 hours in patients with their first attack, in 21.5 hours in patients with their first relapse.

Relatively few toxic reactions to Camoquin were noted. In a few patients with Boeck's sarcoid given this same dosage every 4 days, leukopenia occurred but recovery ensued when the drug was discontinued.

Up to 1 July 1952, the relapse rate was 20%. At least 7 months have elapsed since the last patient in this series was treated. Three percent of patients relapsed twice and 1 patient has had a third and fourth relapse, the last one occurring despite treatment with 5 mg. per kilogram body weight.

The recommended treatment of an acute attack of Plasmodium vivax malaria at present is a single dose of Camoquin, 10 mg. per kilogram body weight, or 2.5 gm. of chloroquin over a 3-day period, plus a course of 15 mg. of primaquin daily for 14 days to prevent relapses. (Am. J. M. Sc., Jan. 1953, Capt. J. Love, MC, USN; Lt. R. Foulk, MC, USN; Lt. R. G. W. Williams, Jr., MC, USN; and Lt. (jg) R. B. Mitchell, MC, USNR)

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Wolff-Parkinson-White Syndrome in Infants and Children

The combination of a short P-R interval and a prolonged QRS duration on the electrocardiogram in frequent association with attacks of paroxysmal tachycardia was first recognized as a syndrome in 1930 by Wolff, Parkinson, and White. Since that time several hundred cases have been reported. Most of the patients in these cases have been young adult males in good health except for the episodes of tachycardia.

Although the syndrome is not rare in the younger age group, the reported instances of this condition in infants and children to the age of 14 years are few.

Four infants and children with the Wolff-Parkinson-White syndrome have been followed at the New York Hospital for a period of from 1-1/2 to 10 years. One of these was only 6 days old when the preexcitation phenomenon was found in the electrocardiogram. Symptoms compatible with attacks of tachycardia dated from the first day of life. He is the youngest patient with this abnormality yet recorded.

The finding of the Wolff-Parkinson-White syndrome at 6 days of age in a patient whose symptoms began on the first day of life, and the occurrence of episodes of tachycardia from birth in another patient strongly suggest that the condition is of congenital origin. Reports in the literature of 6 other infants 1 month of age or less with this syndrome, and with symptoms

of paroxysmal tachycardia within the first week of life in at least 2 of them, further support the congenital nature of the preexcitation syndrome.

It is generally agreed that the most likely explanation of the short P-R-prolonged-QRS electrocardiogram is the presence of an accessory atrioventricular conducting pathway, which permits the premature depolarization of a portion of the ventricular muscle.

Although it is probable that the condition is congenital in origin, it is usually the only cardiac anomaly in the patient. The frequent occurrence of this syndrome in adults whose hearts are otherwise normal has long been known, and in the reported infants and children there was usually no other evidence of heart disease.

Although the symptoms of paroxysmal tachycardia in infancy are characteristic, they are also nonspecific, and the baby's true difficulty may be recognized and treated too late. The abnormally rapid heart rate, which is the clue to the diagnosis, may be overlooked or misinterpreted. Typically, an attack is associated with vomiting, irritability, an ashen-gray color, and a prostrate appearance. If the attack continues, signs of cardiac failure appear. The infant has rapid, difficult respirations and a cough. The temperature usually rises, but may be subnormal. Examination at this time reveals, in addition to the tachycardia, an enlarged heart, rales in the lungs, and hepatomegaly. Later, peripheral edema and ascites occur, and the baby may die in congestive failure or in peripheral vascular collapse.

In the treatment of an infant during an attack, digitalis, or one of its allied compounds, is quite effective and is considered by Hubbard, Gibson, and others to be the drug of choice. Recurrent attacks of tachycardia may be reduced in frequency or even eliminated by maintaining the child on digitalis for a period of months or years. An adequate digitalizing dose for most infants is 35 mg. per kilogram of body weight of digitalis or 0.035 mg. per kilogram of body weight of digitoxin ("digitalline native"), usually given in divided doses over a 12- or 24-hour period. The daily maintenance dose is between 0.1 and 0.2 of the total digitalizing dose. Quinidine sulfate is frequently beneficial in terminating an attack; however, for small infants the optimal dosage schedule of this drug has not been determined. In desperately ill infants, immediate reversal of an attack may be accomplished by the administration of acetylcholine bromide in small doses. By intravenous administration 1 mg. may be given initially and the dose doubled every 10 to 15 minutes until conversion of the abnormal rhythm is obtained. Atropine in a syringe should be available if needed as an antidote. Procaine amide hydrochloride, neostigmine methylsulfate, and phenylephrine neo-synephrine hydrochloride may be useful.

In children the attacks of paroxysmal tachycardia are less hazardous than in infants. The paroxysms often can be stopped by the child's holding his breath, gagging, vomiting, or assuming a particular position. Supra-orbital or carotid sinus pressure is frequently effective. In addition to these simpler measures, any of the drugs mentioned may be used. (Am. J. Dis. Child., Dec. 1952, M. A. Engle)

Peliosis Hepatis

Peliosis hepatis is a rare condition consisting of diffuse angiomatosis of the liver. The term peliosis hepatis was adopted by Schoenlank. The condition has also been called "telangiectasia hepatis disseminata," "Leberblutung," "multiple Leberblutung," and "angiomatosis hepatis." The cause of peliosis hepatis has not been adequately explained in spite of the fact that the condition was described by Wagner in 1861. In a comprehensive review, Zak recently discussed the pathogenesis and summarized the pathologic findings. The authors report 3 additional cases and discuss the possible pathogenetic factors.

Of the 3 patients reported, 1 died in a diabetic coma, 1 of polyserositis, and the third of pulmonary tuberculosis and rheumatic heart disease. The first 2 represented the mature stage of peliotic lesions and the third all the stages in the formation of peliotic foci postulated by Senf. The tissues were stained with hematoxylin and eosin, Wilder's reticulum stain, and Van Gieson's stain for microscopic examination.

In Cases 1 and 3 the spleen showed extremely dilated venules and sinusoids. These could readily be attributed to congestion. Very likely, previously reported cases of angiomatosis of the spleen concomitant with peliosis were actually cases of congested, dilated veins. In cases of pulmonary tuberculosis, pulmonary obstruction, cough, and pleuritis with impingement on the inferior vena cava produced increased visceral venous pressure. In the liver the congestion led to peliosis. Although congestion of the liver is found in most cases of peliosis, the cause of the congestion is not always anatomically apparent.

Recent literature emphasizes necrosis caused by tuberculous toxins as the initial phase. However, the majority of authors implicated congestion as the major cause. It is possible to reconcile these different views by considering that necrosis follows and is the result of severe congestion. Such a sequence is a well-known occurrence in profound passive congestion, such as occurs in far-advanced, right-sided heart failure with the production of central-lobe necrosis. The authors believe that Case 3 contains the clue to the explanation of peliosis hepatis. In this case all the stages noted by Senf were seen. As a result of the pulmonary tuberculosis and rheumatic heart disease, the passive congestion of the liver was pronounced, and it was possible to see the actual transition from this congestive state to necrosis and finally peliosis. In Case 1 no reason for the congestion was found anatomically and yet the liver was moderately congested. In Case 2 anatomical features adequately explained the pronounced visceral venous congestion. The patient had adhesive pericarditis, universal adhesive pleuritis, and diffuse chronic adhesive peritonitis, all of which contributed to hepatic congestion.

The authors' contention differs somewhat from that of Senf, Weber, and Zak. These authors believe that in the cases of congestion, bleeding

into a necrotic focus occurs. The authors' studies led them to believe that the necrosis is actually due to the congestion. It might be expected that because of the common occurrence of hepatic congestion the lesions would be found more often. Undoubtedly peliosis is more common than published reports would indicate. However, the disorder is obviously rare. There must be another factor, as yet unknown, in addition to congestion to produce the necrosis. (Arch. Path., Dec. 1952, F. T. Hamilton and J. M. Lubitz)

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The Dentist and the Explosion Hazard

Current dental literature in anesthesiology has been concerned chiefly with the art and science of general anesthesia. Operating room accidents from fire and explosion while using combustible anesthetic gases have not been brought to the dental profession's attention sufficiently.

Accidents arising from the use of explosive gases occur in approximately 1 out of every 100,000 general anesthetics. It is not surprising that such accidents occur because almost all of the anesthetic gases are explosive and there is a lack of knowledge on the part of operating room personnel, both professional and nonprofessional, of the potential hazards connected with the use of anesthetic gases. Lack of interest and information on the necessity and importance of mandatory safeguards on the part of many hospital administrators has also been reported.

The necessary prerequisites for an anesthetic explosion are: (a) The use of flammable liquids or gases in sufficient quantities and in an explosive mixture with free air, pure oxygen, or oxygen from nitrous oxide. (b) A source of heat sufficient to raise the liquid to its flash point or the gas to its ignition temperature.

Explosions are of two general types: Internal—when they occur within the closed system of the anesthetic apparatus, which includes the patient's respiratory system. External—when they occur in the immediate vicinity of the operation, but not within the anesthesia system.

Frequently, explosions are a combination of the two types, and actually the difference between them is academic rather than real. Internal explosions which occur within or spread to the patient cause severe burns of the nasopharynx and tracheobronchial tree and frequently rupture the pulmonary alveoli terminating in severe uncontrollable hemorrhage. Such accidents almost always are fatal to the patient. External explosions behave like any conventional explosions and result in injuries and sometimes death to the patient as well as to the surgical team and other operating room personnel. In addition to burns, injuries from flying glass and pieces of broken apparatus may occur.

Specific recommendations for the prevention of explosion hazards are:

(a) The general physical and chemical properties of the gases and their relative explosive properties should be understood and appreciated. Special instruction and periodic attention to the problem is needed for continual alertness.

(b) The substitution of safe anesthetic agents for the dangerous gases when such explosion-producing appliances as cautery, diathermy, and x-ray equipment must be used. When such electrical equipment is employed, and the substitution of a safe anesthetic is not possible, extraordinary precautions should be used only with the full knowledge of the dangers involved.

(c) The electrical system should be constructed so as to conform with the National Electrical Code and should be inspected regularly.

(d) The static hazard must be understood and the static-producing materials such as wool, rubber, silk, nylon, plastic, and so forth should be excluded or substituted for whenever possible.

(e) The use of conductive floors or suitable substitutes should be mandatory.

(f) All furniture should be constructed of metal or other conductive material. Surfaces on which movable objects may be placed should be without lacquer or other insulating finish. Casters, tires, or leg tips shall be of unpainted metal or conductive rubber, with a floor contact surface having one dimension of at least 5/8 inch. (Drag chains which were previously conditionally approved, are not accepted in the June 1952 standards of the National Fire Prevention Association)

If all the available and known preventive measures were employed, anesthetic explosions would be extremely rare, and the emotional and legal complications resulting from such accidents would be practically eliminated. (J. Oral Surg., Jan. 1953, E. J. Driscoll)

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Benadryl and Sulfadiazine in the Treatment of Trachoma

Until a more specific treatment is found for trachoma, sulfonamide treatment whether alone or in combination with other procedures is still, according to most authors, the method of choice.

Because the hyperplastic conjunctival lesions (where sulfonamide therapy alone proved a relative failure) probably represent an allergic type response, it was thought that the combined use of an anti-allergic drug such as benadryl with sulfonamide might prove to be the answer. In this study the effect of such treatment on the hyperplastic granulations of trachoma as seen in stages II and III is reported.

The group studied was comprised of food handlers from Saudi Arabia who were employed on Station VI near the Jordanian border in the Trans-Arabian Pipe Line (Tapline) Project. There were 34 patients, all males between 18 and 30 years of age. Of these, 19 were found to be positive for trachoma, with 2 in stage I, 6 in stage II, 7 in stage III, and 4 in stage IV. The stages as used here correspond to MacCallan's classification:

- I. Incipient early stage of infiltration
- II. Active inflammation, tarsal conjunctivae are hyperemic, with subepithelial infiltration and follicles.
- III. Combined hyperplastic granulations and scarring.
- IV. Stage of healing and scarring.

There was remarkable objective and subjective improvement in the group of trachoma patients with hyperplastic conjunctival lesions (i. e., in stages II and III of the disease) following the use of a combined treatment of benädryl and sulfadiazine. Subjective improvement was noted as early as 24 hours after the start of treatment and objective improvement was seen 1 week after the start of treatment. It was thought that the addition of benädryl to sulfonamides in the treatment of trachoma not only helped to alleviate the subjective symptoms earlier and to cut down on the dosage of sulfonamide and therefore its toxicity, but also helped to overcome the main disadvantage of the sulfonamide treatment alone (that of negligible action on the hyperplastic conjunctival lesions) by reducing the associated allergic hyperplastic tissue response so that the sterilizing effect of the sulfonamides is better accomplished. (J. Trop. Med., Dec. 1952, J. G. Makari, Beirut, Lebanon)

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Dysgerminoma of the Ovary

Dysgerminoma of the ovary has long aroused considerable speculation concerning its cellular origin. The dysgerminoma occupies a unique position in tumors of the female gonad in that it has a histologically similar counterpart, the seminoma, in the male gonad. In view of this analogy the most widely accepted theory of histogenesis is that of Robert Meyer, who proposed the concept that dysgerminomas arise from a sexually undifferentiated stage of gonadal development. Meyer also stated that these cells are not capable of differentiating into the male or female types. The neuter character of the tumors is further supported by the lack of hormonal activity. The occasional occurrence of dysgerminomas containing choriocarcinoma or teratomatous elements is not adequately explained by Meyer's theory, unless it is assumed that they represent mixed tumors of the "collision" type. This implies that they are actually two separate tumors arising from different cells of origin. This explanation seems unlikely.

The occasional occurrence of choriocarcinoma within dysgerminoma of the ovary leads to the conclusion that the cell of origin must be totipotent. Babes, Reifferschneid, and Schiller have each reported cases of mixed tumors composed of dysgerminoma and granulosa cells. Meckler and Black have reported a case of gynandroblastoma containing both arrhenoblastic and granulosa cell elements. These instances of mixed types of neoplasms further support the view that the cell of origin is a totipotent cell of the primitive gonadal mesenchyme capable of differentiating in any direction. If the

development and growth of the tumor in the female is along neuter lines, a monocellular dysgerminoma results; or if the analagous tumor develops in the male, the tumor is a seminoma.

The totipotent cell may also differentiate along either male or female lines. If the former occurs, the resulting tumor is an arrhenoblastoma, or if the latter, a feminizing mesenchynoma is produced. The totipotent cell is also capable of producing a tumor which may differentiate to a choriocarcinoma or teratoma.

If this idea is carried further, the fact that numerous other mixed tumors are theoretically possible must be accepted.

The authors believe that the mixed tumors of the ovary containing a combination of cellular elements such as dysgerminoma and choriocarcinoma, or granulosa cell tumor and dysgerminoma should be identified as mixed tumors with indication of the principle cell type because the clinical evolution and prognosis will vary with the type of cell which ultimately predominates. Only those monocellular tumors developing along "pure" neuter cell lines should be classified as dysgerminomas.

There is no specific clinical syndrome associated with dysgerminoma of the ovary. The most common complaints are lower abdominal pain and the presence of an abdominal tumor. In 2 of the authors' cases the mass was sufficiently large to be felt on abdominal examination. None of the patients experienced any abnormal vaginal bleeding, although such a finding has been occasionally reported. One of the patients had amenorrhea for 2 months and the tumor was found to be bilateral with only a narrow rim of ovarian tissue remaining. Because dysgerminoma is a nonfunctioning tumor, no deviation of menses is expected except for those changes produced by replacement of ovarian tissue.

Dysgerminoma occurs most frequently before the age of 30 years. Mueller in an analysis of 427 cases reported that 72% of these tumors have occurred in the second and third decades of life. All 5 of the authors' cases fall into this group, the oldest being 27, the youngest 16 years.

It is obvious then that the final diagnosis cannot be made with accuracy before operation. However, much information excluding other diagnoses can be obtained preoperatively.

A critical analysis of the authors' cases and of these previously reported establishes the highly malignant potentialities of dysgerminoma. Treatment by removal of the tumor is entirely inadequate. The tumor occurs most commonly in the younger age group and, because of isolated case reports of prolonged survival with conservative surgical therapy, physicians have been reluctant to institute radical measures. However, it should be emphasized that 4 of the 5 cases in this series died within 2 years of operation and all were treated by conservative surgery consisting of unilateral or bilateral oophorectomy. Although 5 cases are not statistically significant, the death of 4 of the 5 patients within 2 years of operation certainly indicates that this

is a highly malignant tumor. The treatment of choice is radical surgery and postoperative roentgen therapy. (Am. J. Surg., Jan. 1953, R. F. Looker, W. P. Callahan, Jr., and F. E. Barry)

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Chemoprophylaxis of Respiratory Infections in Recruits

An epidemic of acute respiratory disease, beginning early in January 1952 at the Bainbridge, Md. Naval Training Center, reached its peak during the first few days in February when the disease incidence rate was 210 per 1,000 per week. Because a sizable proportion of the cases appeared to be streptococcal in origin, prophylaxis with 125,000 units of penicillin and 1 gm. of sulfadiazine given daily by mouth was instituted.

The incidence of streptococcal disease actually represented only a small fraction of the incidence of total respiratory disease, and the resultant study showed the effect of the two drugs on nonstreptococcal as well as on streptococcal diseases.

One of three large regiments was given penicillin only, while the other 2, totaling about 11,000 recruits, were divided into medication groups as follows: 30% received penicillin by mouth for 4 weeks, 30% received sulfadiazine for 2 weeks, and 40% were controls. All illnesses which developed in the recruits in these 2 regiments were observed and cultures for streptococcus were obtained from all sick individuals. Surveys were made on 20 entire companies of recruits before, during, and after prophylaxis to determine the effect of the drug on the prevalence of streptococci in the population.

There was a sharp decline in the incidence of respiratory disease beginning immediately after prophylaxis was started. Part of this decline may be attributed to the prophylactic program. The relative effectiveness of the 2 drugs, when compared with the controls, is as follows:

1. Sulfadiazine was more effective than penicillin against nonstreptococcal respiratory disease.
2. Penicillin and sulfadiazine were equally effective against streptococcal respiratory disease.
3. Penicillin was more effective than sulfadiazine in decreasing the prevalence of streptococci in the general population.

There was no evidence of the development of strains of streptococci resistant to penicillin or sulfadiazine, although 3 sulfadiazine-resistant strains were encountered.

The principal type of group A streptococcus recovered was type 12, with types 6, 3, 19, and 11 next in order of frequency.

There were no serious reactions to the drugs used. The incidence of dermal reactions to penicillin was 1 in 300, to sulfadiazine 1 in 450, and to aspirin 1 in 2,000.

No reduction in the number of streptococcal disease sequelae by either medication was demonstrated. Cases of acute glomerulonephritis were seen more commonly than rheumatic fever. Scarlet fever was encountered rarely. (Am. J. Hyg., Jan. 1953, H. M. Gezon, J. S. Cook, Jr., R. L. Magoffin, and C. H. Miller)

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Fixed Bridgework

In this discussion of fixed bridgework, no attempt is made to enlarge upon so-called "correct procedures" but certain procedures are reported on which, in the author's experience, have been found satisfactory and stable.

Because every mouth presents its own peculiar set of health conditions, and because these conditions are interpreted by every operator from the background of his own particular training and experience, it seems unwise to lay down any hard and fast rules as to what is desirable or undesirable in any one type of restorative work. The author merely states that in his experience the fixed bridge, where indicated and where properly constructed, has been found to be the most successful restoration, not only from the viewpoint of health and natural function, but also from the viewpoint of appearance and lasting qualities. The fixed bridge is the easiest to care for, comes nearer satisfying the patient's pride and peace of mind, and seems more nearly a part of his natural make-up than any removable appliance.

In approaching the individual case, the diagnosis is made by (a) accurate casts so mounted as to allow for a satisfactory study of the existing occlusion; (b) a complete roentgenographic examination; and (c) adequate notes of conditions observed in the mouth and the case history obtained from the patient.

These are the fundamental steps in gathering the material from which the recommendation for restoration is made.

Out of this material, two groups of cases arise: those favorable to bridgework and those unfavorable to bridgework. In one group, the occlusion is harmonious and efficient, or can be made so without excessive destruction of tooth structures. In the other group, harmony and restoration can be established only by employing a general reconstructive program. Too much emphasis cannot be given to the necessity for a favorable occlusion. Disregard of this fact explains many failures of both fixed and removable bridges.

The supporting bony structures also play an important role in the success or failure of bridgework. The nature of the bone factor may be closely determined by means of the roentgenograms and a study of the conditions observed in the mouth. Additional stress is imposed on any tooth which serves

as an abutment, and the adequacy of the supporting bony structures to withstand and counteract these added stresses is a prime consideration in planning restorations.

Another essential is the health of the dental pulp. Normal pulps decrease gradually in size, and the dentine becomes more consolidated as the age of the patient advances. This decrease in pulp size makes possible the employment of fixed restorations where a younger pulp would be indisposed by it. This does not rule out the necessity of always making certain of the pulp's size and position and the degree of calcification by roentgenograms and for determining the pulp's response to diagnostic stimuli.

The author does not hesitate to make the necessary preparations for bridge retainers on vital teeth, either with or without caries or fillings, if, in his judgment, the evidence seems to assure favorable conditions. Shallow preparations, the elimination of frictional heat, and the proper treatment and protection of the cut dentinal surfaces will reduce the amount of irritation to a point where the possibility of pulp degeneration is almost negligible. The cutting of sound tooth structure is limited to the amount required for a proper outline, retention, and a resistance form, and to permit the placing of retainers from a common direction.

The chief essentials to satisfactory fixed bridgework are: (a) a mouth in which a favorable occlusion is present or in which conditions are favorable to bringing about this harmonious state, (b) absolute thoroughness in making roentgenographic and other diagnostic examinations, and (c) the maximum of care and attention to details in making retainers on the abutment teeth. (Journal of Prosthetic Dentistry, Jan. 1953, H. D. Grubb)

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Combined Armed Forces Medico-Military Symposium

The first annual Armed Forces Medico-Military Symposium under the auspices of the Commandant, Ninth Naval District, will be held at the U.S. Naval Hospital, Great Lakes, Ill., 6-8 May 1953. The program has been designed to provide the Reserve and Regular medical department officer with information regarding current concepts in varied fields of endeavor related to medical and dental services in the Armed Forces. The subjects will be presented by speakers of outstanding prominence in their specialties.

The Chief of Naval Personnel has approved this symposium for the awarding of retirement point credit to those Naval Reserve medical department officers attending under appropriate duty orders. Naval Reservists residing in the Ninth Naval District may be issued appropriate duty orders, without pay, at the time of registration. Inactive Naval Reserve medical department officers residing in other naval districts and the Potomac River Naval Command who desire to receive retirement point credit for attendance at this symposium should submit their request to the Commandant of their

home naval district for appropriate duty orders, without pay, covering the number of days which they plan to be in attendance. Officers on active duty may be given "Authorization orders" in accordance with current instructions.

The complete program and full information is available at the District Medical Office, Headquarters, Ninth Naval District, U.S. Naval Training Center, Great Lakes, Ill. Correspondence and inquiries regarding this symposium should be forwarded to that address. (Reserve Div., BuMed)

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From the Note Book

1. It is believed that a misconception is arising in the minds of some of the readers of the News Letter. The idea is apparently gaining ground that the medical information abstracted in the News Letter is the last word and that it represents the attitude, the opinion, and an endorsement by the Medical Department of the Navy. The mere publication of medical information does not necessarily reflect either the opinion of the Department of the Navy in general or the Medical Department in particular. The items published, except those from official documents, represent the opinion of each author or authors and are published solely as a matter of information. (Editor)

2. Three of the Bureau's scientific exhibits were displayed at the Greater Philadelphia Annual Meeting of the Philadelphia County Dental Society which was held 4-6 Feb 1953, at the Bellevue-Stratford Hotel in Philadelphia. "The Role of the Dentist in Atomic Disaster"; "The U. S. Navy's Facsimile Arm for Venipuncture Training"; and "Auricular Prostheses" were the exhibits displayed. (TIO, BuMed)

3. There were 68 Navy and Marine Corps personnel killed in the United States as a result of automobile accidents during the 35-day period 1 Dec 1952 through 4 Jan 1953. The week-end and holiday deaths were reported as: No deaths during the week-end of 13-14 Dec; 5 deaths each for the week-ends of 6-7 Dec and 3-4 Jan; 9 for the holiday period of 31 Dec-1 Jan 1953; 6 deaths during the week-end of 27-28 Dec; 9 deaths during the week-end of 20-21 Dec; and 9 deaths for the holiday period of 24-25 Dec. (OPI, DOD)

4. An outline under 7 major categories and 1 under contraindications for and the results of commissurotomy for mitral stenosis appears in the Journal of Thoracic Surgery, Jan. 1953, R. P. Glover, T. J. E. O'Neill, J.S.C. Harris, and O. H. Janton.

5. The circumferential clasp consisting of a buccal or labial arm and a lingual arm which together engage more than 180 degrees of the circumference of a tooth, can be used correctly as a retainer for a partial denture only after its effect on the abutment tooth and its periodontium has been analyzed and made physiologically correct. (Journal of Prosthetic Dentistry, Jan. 1953, O. E. Beder)
6. Anticoagulant therapy occupies an important place in the management of acute myocardial infarction, yet at present the concept of its routine use as necessary or desirable, cannot be supported. (Am. J. M. Sc., Jan. 1953, H. L. Russek and B. L. Zohman)
7. A clinical classification and differential diagnosis of the causes of vaginal discharge to simplify office management, is presented. Specific office therapy is discussed with each diagnosis. (Am. J. Surg., Jan. 1953, G. Blinick and S. A. Kaufman)
8. The causes of fetal and neonatal death with special reference to pulmonary and inflammatory lesions is discussed in the Journal of Pediatrics, Jan. 1953, J. B. Arey and J. Dent.
9. A simplified technic for the removal of diffusible substances by peritoneal irrigation is described in the New England Journal of Medicine, Jan. 22, 1953, M. Legrain and J. P. Merrill)
10. In cold injury prophylactic measures are valuable. Treatment consists of simple hygienic measures, early use of antibiotics, anticoagulant drugs, and the utmost conservatism in regard to surgical methods. The more conservative the surgeon, the lower the rate of major amputations. (GP, Jan. 1953, G. H. Pratt)
11. Early diagnosis of glaucoma is imperative. Early recognition of the disease will reduce the incidence of blindness. (Postgrad. Med., Jan. 1953, R. E. Prindle)
12. An article which describes the basic concepts of full mouth rehabilitation and which discusses technics to be employed, appears in Dental Digest, Jan. 1953, I. Goldman.
13. The x-ray appearance of gastric varices, and the frequency of their occurrence with esophageal varices in portal hypertension is discussed in Radiology, Jan. 1953, J. A. Evans and F. Delaney.
14. The management of silent staghorn calculi in the aged is discussed in Geriatrics, Jan. 1953, A. C. Drummond.

List of Recent Reports Issued by Naval Medical Research ActivitiesNaval Medical Research Institute, Bethesda, Md.

1. A Resume of Five Naval Medical Research Institute Reports on Research Project X-533 on Odor Control. Lecture and Review Series No 52-7, 5 Nov 1952.
2. Pharmacological Studies on Irradiated Animals. III. Effect of Saline on Radiation-induced Mortality and Weight Changes. NM 006 012.05.09, 17 Nov 1952.
3. Coliform Growth Failure: A Phenomenon Apparently Associated With Resistance to Shigellosis. NM 005 048.04.15, 10 Nov 1952.
4. A Direct Reading Rate Meter for High-Intensity Penetrating Radiation. NM 006 012.04.57, 27 Oct 1952.
5. A Study of Certain Chemical and Photo-chemical Reactions of Possible Application to the Sterilization of Plasma. NM 005 052.25, 7 Nov 1952.
6. A Study of the Relations of Antibiotics, Vitamins and Hormones to Immunity to Infection. NM 005 048.06.04, 29 Sep 1952.
7. Thermometer Envelope for Prevention of Cross-Infection. Memo. Report 52-15 related to NM 000 018.07, 20 Nov 1952.
8. Human Endurance to High Levels of Heat and Humidity. Research Report Project X-205, Report #9, 9 July 1952.
9. Topical Nitroglycerine in Frostbite Prophylaxis. Memo. Report 52-10 related to NM 000 018.01, 20 Aug 1952.

Medical Research Laboratory, U. S. Naval Submarine Base, New London, Conn.

1. The Interview: I. A Selective Abstracted Bibliography. NM 002 016.01.01, 2 Jun 1952.
2. The Interview: II. Aids to the Interview--The Confidential Questionnaire. NM 002 016.01.02, 15 Oct 1952.
3. The Interview: III. Aids to the Interview--The Submariner Stereotype. NM 003 016.01.02, 20 Oct 1952.

Radiological Defense Laboratory, San Francisco, Calif.

1. Prevention of Deposition of a Fission Product by Salts of Ethylene Diamine Tetra-acetic Acid, 19 Aug 1952.

Naval Medical Research Unit #3, Cairo, Egypt

1. Terramycin-Streptomycin Therapy in Acute and Subacute Brucellosis Due to *Brucella Melitensis*. NM 007 082.11.03
2. Clinical and Laboratory Observations on Brucellosis Melitensis in Egypt. NM 007 082.11.04
3. A Malaria Survey in Iran (With Notes on the General Health Status of the Country). NM 005 050.39.24, 15 Aug 1952.

Naval Medical Field Research Laboratory, Camp Lejeune, N. C.

1. Intra-Arterial and Intravenous Transfusion: A Controlled Study of Their Effectiveness in the Treatment of Experimental Hemorrhagic Shock. NM 006 014.07.01, Dec 1952.
2. A Ship's Motion and the Incidence of Seasickness. NM 005 052.31, Nov. 1952.
3. The Use of Silicote^R as a Skin Protectant. NM 005 052.08, Jan 1953.
4. A Study of the Etiology, Epidemiology, and Therapeusis of Nongonococcal Urethritis. NM 007 100.03.01, Jan 1953.

U.S. Naval School of Aviation Medicine, U.S. Naval Station, Pensacola, Fla.

1. Electrocardiographic Standard for Healthy Persons 10-19 Years of Age: Familial Depression of the RS-T Segment of the Electrocardiogram. NM 001 057.02.02.
2. The Radial Spread of the Tissue Ionization Dosage in Heavy Nuclei Tracks of the Primary Cosmic Radiation. NM 001 059.13.04, 5 Aug 1952.
3. Observations on the Elasticity of the Pulmonary Vasculature in Man. NM 001 050.01.06, 25 July 1952.
4. An Evaluation of the Measurement of the Cardiac Output and of the So-called Pulmonary Blood Volume by the Dye-Dilution Method. NM 001 050.01.07, 25 July 1952.
5. Visual Factors in the Perception of Verticality. NM 001 063.01.29, 19 Aug 1952.
6. The Absence of Residual Effects Attributable to the Otolith Organs Following Unilateral Labyrinthectomy in Man. NM 001 059.01.33, 1 Oct 1952.
7. Analysis of Basic Factors Constituting Necessary Mathematical Proficiency Required for Success in Naval Aviation: Report II. Subtraction. NM 001 058.20.02, 1 Nov 1952
8. The Development and Tryout of Objective Check Flights in Pre-Solo and Basic Instrument Stages of Naval Air Training Joint Program Report. --The Psychological Corporation, New York, N. Y., NM 001 058.24.01, 1 July 1952.
9. The Effects of Decompression on Subjects Repeatedly Exposed to 43,000 Feet While Using Standard Pressure Breathing Equipment. NM 001 059.21.02, 25 Apr 1952.
10. The Tests of General Educational Development (College Level) as Predictors of Performance in the U.S. Naval School, Pre-Flight. NM 001 057.16.01, 18 Nov 1952.
11. An Investigation of the Relationship Between Academic Performance in Pre-flight and Ultimate Success or Failure in Basic Flight Training. NM 001 058.17.01, 24 Nov 1952.

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BUMED INSTRUCTION 6224.1

13 Jan 1953

From: Chief, Bureau of Medicine and Surgery

To: All Stations

Subj: Routine photofluorographic examinations of the chests of dependents of naval personnel

Ref: (a) Art 15-90 ManMedDept

1. This instruction provides for routine photofluorographic examinations of the chests of dependents of naval personnel. BuMed C/L 51-104 is cancelled.

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BUMED INSTRUCTION 6222.3

28 Jan 1953

From: Chief, Bureau of Medicine and Surgery

To: All Ships and Stations Having Medical Department Personnel Regularly Assigned

Subj: Oral penicillin as additional prophylaxis for prevention of gonorrhea

1. This instruction provides information regarding the use of oral penicillin as an additional prophylactic measure for the prevention of gonorrhea. BuMed C/L 52-22 is cancelled.

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BUMED INSTRUCTION 5041.2

28 Jan 1953

From: Chief, Bureau of Medicine and Surgery

To: Inspectors Naval Dental Activities Atlantic and Pacific Coast, Fleet and Force Dental Officers, District and Staff Dental Officers

Subj: Schedule of proposed inspections by district and staff dental officers; forwarding of

Ref: (a) Art. 1-12(15), ManMedDept

(b) Art. 6-30, ManMedDept

(c) Art. 6-42, ManMedDept

1. This instruction establishes procedures whereby the Bureau will obtain advance information relative to places and approximate dates of proposed inspections by addressees.

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BUMED NOTICE 5215

30 Jan 1953

From: Chief, Bureau of Medicine and Surgery

To: All Ships and Stations

Subj: BuMed circular letters; cancellation of several

1. The following BuMed Circular Letters are cancelled as having served their purpose or covered by other information and directives: 44-115, 44-237, 45-4, 47-28, 47-60, 47-148, 47-173, 48-64, 48-72, 48-105, 48-139, 49-35, 49-59, 49-165, 50-79 (Encl. 1), 50-112, 50-139, 51-38, 51-41, 51-43, 51-56, 51-70, 51-76, 51-87, 51-90, 51-107, 51-113, 51-159, 51-162, 52-12 (Encl. 1), 52-19, and 52-50.

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BUMED INSTRUCTION 4220.2

2 Feb 1953

From: Chief, Bureau of Medicine and Surgery

To: All Ships and Stations Having Medical/Dental Personnel Regularly Assigned

Subj: Requisitioning and receipt of medical and dental material; instructions concerning

Encl: (1) Instructions for the Preparation and Submission of the BuMed Material Requisition (NavMed For 4), and for Acknowledging Receipt of Material.

1. This instruction promulgates revised procedures for requisitioning and receipt of medical and dental supplies and equipment from Naval Medical and Dental Supply Depots. Enclosures 1, 2, 5, and 6 of BuMed C/L 51-100 and BuMed C/L 51-126 and 52-27 are cancelled.

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BUMED INSTRUCTION 12250.1

2 Feb 1953

From: Chief, Bureau of Medicine and Surgery
To: Activities Under the Management Control and Financial Responsibility of BuMed

Subj: Ungraded (non-IVb) positions; maintenance review of

Ref: (a) NCPI 250.7-1m
(b) OIRNOTE CP275 of 2 June 1952
(c) CPL&D-45-186 of 28 Apr 1945

1. This directive reissues unchanged instructions covering maintenance review of ungraded (non-IVb) positions. BuMed C/L 52-61 is cancelled.

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AVIATION MEDICINE DIVISION



The High-Intensity Noise Problem

It has been recognized for a number of years that carrier flight decks have been becoming increasingly noisy. With each new engine development, power output has become greater and the noise level higher. Anyone who has served aboard a carrier is very well aware of the fact that noise levels have become higher and, with the use of some jet planes in each carrier air group, the upper limit of tolerance has just about been reached. The Navy Department has become increasingly aware of this problem and has now reached the point of being acutely concerned with the possibility of intolerable noise levels being reached in the near future. It is expected, when jet engines equipped with afterburners become operational aboard carriers, that this problem will be acute, and may even dictate some changes in carrier operational procedures in order to operate these planes without causing severe personnel injuries. The Medical Department of the Navy, and particularly the Flight Surgeon serving aboard the carrier, is most intimately concerned in the solution of this high intensity noise problem and in the measures which must be employed to safeguard personnel. Education of carrier personnel into the hazards of high-intensity noises is needed now. Action in providing carrier personnel with proper protective devices is immediately

indicated. It is desired that all Flight Surgeons concern themselves with this problem and take all steps within their power to prevent personnel casualties resulting from exposure to high-intensity noise fields. It should be pointed out that, whereas the carrier problem is most acute, other personnel who are shore-based will be involved or affected to varying degrees. Line maintenance personnel, both ashore and afloat, will be exposed to high noise levels in the course of their duties. Civilian personnel may also be involved, particularly those engaged in the operation of engine test cells.

It is pertinent to point out the present status of the high-intensity noise problem and the steps that are being taken to counter it. About a year and a half ago, various offices of the Navy Department became aware of the potentialities of planned aircraft power plants to produce noise levels which heretofore had not been encountered. There was a great deal of speculation as to the effects which these high-intensity noises might produce upon personnel and upon the efficiency of carriers when these new power plants became operational. Consultations with authorities in the field of high-intensity noise research indicated that no ready solutions to the problems of high-intensity noises were available and, further, they were likely to be of a scope even greater than had been anticipated. It was believed that afterburner jet engines would produce sound fields greater than any encountered in the past except for heavy calibre gun blasts or similar explosions. It was pointed out, however, that the sustained output of these engines introduced a quite different problem from the short duration blast noise. In common parlance, it was considered that the noise level to be expected would be roughly the equivalent of the output of a full symphony orchestra multiplied 10,000 times.

The first practical step taken to solve this problem was to arrange for a team of research personnel and their equipment to make a cruise aboard a carrier. The carrier selected was the U. S. S. Coral Sea and the research personnel were aboard during her shakedown cruise in the Spring of 1952. The objective of this study was to determine what effect currently operational planes had upon the hearing of flight deck personnel, whether any hearing losses observed were permanent or transient in nature, whether carrier personnel were in fact being subjected to dangerously high noise levels, and to try to estimate what the probable effect of afterburner jet engines might be upon the efficiency of carrier personnel. There were two major results attained from this study. First, it was shown that flight deck personnel may already be sustaining auditory damage of both temporary and permanent nature. The auditory acuity of young men comprising flight deck crews recently exposed to high noise levels, appeared to be well below that of the normal for their age. This points up the need for the utilization of noise-protective devices in this group of personnel at the present time. Secondly, the information obtained confirmed and reemphasized the seriousness of the over-all problem and served to dispel any hopes that a quick and easy solution might be found. It became obvious that a large amount of work in many fields of science would be necessary before even the scope of the problems could be understood.

It is generally accepted that the upper limit of tolerable noise for the average individual is between 130 and 140 decibels. At this level, very few individuals can perform efficiently and sustain no ill effects. These levels are being reached at the present time on the flight decks of our carriers with the present operational aircraft. It can be expected, in the not too distant future, that the power plants of aircraft operating on carriers will be producing a much higher level of noise, probably in the range of 160 to 170 decibels. To appreciate how much of an increase in over-all noise level this represents, one need only consider the fact that the decibel scale is a logarithmic scale and not a simple arithmetic scale. For example, an increase from 80 db. to 100 db. represents much more than a 20% increase in noise. Actually an increase of 3 db. at any place on the scale doubles the sound level in terms of total energy output. And while the human ear is capable of hearing a wide range of intensity of sound, the threshold of pain is 1 trillion times as loud as the threshold of hearing. Thus, the most commonly used unit for measuring intensity, the decibel, is extremely useful because it expresses the range of human hearing within "0" to 140 instead of "0" to 1 trillion. An indication of the loudness of various intensities of sound expressed in decibels is given below:

<u>Decibels</u>	<u>Examples</u>
0	Absolute quiet
50	Ordinary conversation
90	Auto horn
100	In cockpit of F2H at 84% power at 23,000 feet
120	In cockpit of F4U at 800 rpm, 35" MP at 5,000 feet
135	50 feet at 165 degrees relative bearing from F2H at full power

At first glance, the solution to this problem might seem to be quite simple. One has only to attenuate the noise at its source and then no problem would exist. Unfortunately, such an easy solution is not in sight. In the first place, it has not yet been determined what causes an aircraft engine to be noisy. Instruments and techniques have not yet been developed which are capable of tracking down the source of the noise. About all that is known at the present time is that a definite percentage of the total energy output of jet engines is noise. The problem of converting this unwanted noise into the desired power output is occupying the attention of many engineers. Part of this problem has been that of adequate instrumentation to measure the noise spectra produced by these high-performance engines. Until recently, sound level meters that were capable of measuring reliably above 140 decibels were not available. It was, therefore, impossible to measure the noise level any closer to the engine than the limit of capability of the instrument being used. In most instances this has been in terms of 25 to 50 ft., whereas catapult

crews work much closer to the noise source. There is some hope that a recently developed microphone will enable more scientific determination of the exact noise level and thus lead to ultimate attenuation of the noise at its source.

There has been speculation that a barrier could be devised which would deflect the noise away from personnel in much the same manner that a blast deflector operates. There is little reason for optimism for this sort of solution because of the fact that noise travels in all directions much like a wave.

An analysis of the noise output of jet engines reveals that the spectrum covered is quite wide. It is noteworthy, however, that the peaks of noise pressure are in the low frequency bands. The greatest peaks are in the 200 to 400 cycle band. This points up the seriousness of the protective problem because all known ear defenders are most effective in attenuating high-frequency noise and offer little protection in the low-frequency noise band where the greatest amount of sound energy is produced by these engines. There are many types of ear protectors, but even the best of them attenuates noise no more than 20 to 30 decibels. This does not mean that the use of such devices is superfluous, because they will attenuate the higher frequency noise which is a component of the over-all noise environment and, therefore, protect the ear to an appreciable degree against high-intensity noise trauma. They all have one very definite feature in common, however! They are completely ineffective unless they are worn!

Ear-protective devices are at best uncomfortable unless used routinely. They probably become no less comfortable to wear than hearing aid inserts, women's earrings, or other personal adornments. Much of the objection to ear-protective devices could be overcome if they were properly fitted to the individuals who must use them. This is the job of the Flight Surgeon. Ear defenders are available through supply channels. They should be ordered in large numbers and diversities of sizes. The personnel who are candidates for the use of ear defenders should be adequately informed of the need for such devices. This means an educational campaign directed particularly at the "old hands" who brag of their ability to "take it." Men should then be individually fitted in order to make certain that they at least start off with the optimum in both comfort and advice on how to use the defenders and care for them. It should be pointed out that one can hear better in a noisy environment with ear defenders than without them. The above steps do not complete the picture because an adequate follow-up to insure that the devices are actually properly utilized is necessary.

The auditory effects of high-intensity noises are not the only effects with which the Flight Surgeon must concern himself. There are extra-auditory effects for which one must be constantly alert and both are only part of the whole stress situation. Up to the present time, research in the extra-auditory effects of noise has been quite limited. However, it is known that intense stimulation of the proprioceptive fibers of the nervous system may

occur, which in turn can result in temporary weakness or collapse of the individual exposed to the intense sound field. So far as is known no residual damage has yet been observed and individuals do regain their normal capabilities upon being removed from the intense noise field. Heating of the body may occur in these situations also. In small rodents, death has resulted from exposure to high noise fields. In man, because of an absence of the body fur which facilitates the absorption of energy in these small animals, all that has been observed so far is a slight tendency toward heating of the skin, when the hand is held in a high-intensity noise field with the fingers close together. Some observers have reported adverse psychologic and psychiatric effects from repeated exposures to high-intensity noise. This is to be expected in any stress situation and should be guarded against. The above phenomena are mentioned in order to alert Flight Surgeons to the necessity of careful observation of personnel who may be exposed to high-intensity noise. Consideration should be given to bizarre phenomena which occur under these noise conditions which are otherwise unexplainable. It is obvious that hearing trauma of all kinds can occur, and that these auditory effects may vary between individuals and may be transient or permanent. But, it should not be forgotten that extra-auditory phenomena may also occur and should be seriously considered in relation to the whole problem. The Bureau of Medicine and Surgery is desirous of receiving reports and comments from observers in the field which have a bearing on this whole subject, and particularly on the extra-auditory phenomena which may be observed.

There is still a vast amount of research work to be done before a satisfactory solution to the high-intensity noise problem is attained. This work is being pushed as rapidly as possible within the Department of Defense and within many civilian institutions. A field survey of the facilities, personnel, and available skills in this whole field of high-intensity noise was carried out by the Bureau of Medicine and Surgery during recent months. The Research and Development Board has recommended the formation of a special group composed of individuals from varied scientific fields to cope with this problem. Such an organization is now in the formative stages and it is hoped that in the near future, some of the many answers that are needed will become available. On the practical side of the fence, a number of hearing protective devices are under accelerated development. It is expected that a flight deck crewmen's helmet incorporating the best available sound-attenuating properties will soon be under production for ultimate issue to flight deck personnel. At the same time, work is underway looking forward to the development of more satisfactory insert type devices to be used by personnel who find it difficult to use a helmet.

Rapidly entering the picture, and still further complicating the high-intensity noise problem, are guided missiles. These are capable of producing even higher noise levels than jet engines. One need only let his imagination roam freely for a moment to realize the potentialities for operating personnel casualties inherent in the widespread use of guided missiles. It seems quite certain that we will be confronted with the high-intensity noise problem in one way or another for a long time. (Cdr. C. P. Phoebus, MC, USN)

Transportation to 1953 Aero-Medical Meeting

Air lifts are being planned to carry all military personnel who plan to attend the Aero-Medical Association Meeting on 11-12-13 May 1953, to and from Los Angeles.

Aircraft are tentatively set up to depart from NAS Anacostia, Washington, D. C., NAS Norfolk, Va., NAS Pensacola, Fla., and NAS Glenview, Ill., and return. A complete time schedule with stops enroute will be published in the next issue of the Aviation Supplement to be found in the 17 April issue of the U. S. Navy Medical News Letter.

Due to limited accommodations all those desiring this means of transportation to and from Los Angeles please contact one of the medical officers listed below.

1. Those in the Northeast and New England States contact:
Commander Frank B. Voris (MC) USN
Aviation Medicine Division
Bureau of Medicine and Surgery
Washington 25, D. C.
2. Those in the Mid-Atlantic and Middle Southern States contact:
Captain T. L. Allman (MC) USN
Staff, Commander Air Force U. S. Atlantic Fleet
Fleet Post Office Branch
Norfolk 11, Va.
3. Those in the Southern, Gulf, and South-Western States contact:
Captain J. L. Holland (MC) USN
Commanding Officer
U. S. Naval School of Aviation Medicine
U. S. Naval Air Station
Pensacola, Fla.
4. Those in the Mid-West, Central Plains, and Eastern Rocky Mountain States contact:
Captain R. B. Phillips (MC) USN
Staff, Commander Naval Air Reserve Training
U. S. Naval Air Station
Glenview, Ill.

It is imperative that early information as to the location and number of those wishing to attend the meeting be received in order that scheduled stops enroute may be planned for convenient pickups and discharges.

Spread this word to others who may be interested in the trip.

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Nominations for Change of Duty Made During
December 1952 and January 1953

Captain (MC)

Berk, H. R., from NAS Whidbey Island, Wash., to AirFMFPac, El Toro, Calif.
Loy, A. W., from NAS Atlanta, Ga., to BuMed, Washington, D.C.
Nefflen, E. L., from NAS Agana, Guam, to NAS Glenview, Ill.

Commander (MC)

Dobson, J. P., from U.S.S. Leyte (CVA-32) to U.S.S. Antietam (CVA-36)
Henderson, W. W., from U.S.S. Bon Homme Richard (CVA-31) to NAF
Annapolis, Md.

Jahnke, L. P., from U.S.S. Philippine Sea (CVA-47) to NAS San Diego, Calif.
Mathers, D. H., from NAS San Diego, Calif., to U.S.S. Boxer (CVA-21)
Morris, M., Jr., from NAS Whidbey Island, Wash., to SMO, NAS, Whidbey
Island, Wash.

Stafford, F. B., from NARTU Spokane, Wash., to NAS, Columbus, Ohio.
Wilbur, C. E., from U.S.S. Badoeng Strait (CVE-116) to SAM NAS Pensacola,
Fla.

Worthington, R. W., from NAF Annapolis, Md., to U.S.S. Philippine Sea
(CVA-47)

Lieutenant Commander (MC)

Nordstrom, H. C., to jet air training, NAS Corpus Christi, Tex.

Lieutenant (MC)

Burdick, R. L., from U.S.S. Kula Gulf (CVE-108) to NAS Atlanta, Ga.
Erdbrink, W. L., from VP-2, ComAirPac to Naval Hospital, Philadelphia, Pa.
Kinzer, G. M., from U.S.S. Salisbury Sound (AV-13) to NAS Corpus Christi,
Tex.

Larkin, J. C., from NS Sangley Point, P.I., to NAS Anacostia, Washington,
D.C.

Lyons, H. H., from hospitalization to VR-21

McGee, H. D., from U.S.S. Curtiss (AV-4) to NARTU Spokane, Wash.

Morris, D. P., from NAS Columbus, Ohio, to NS Sangley Point, P.I.

Phillips, J. W., from FASRON 51 to Heavy Attack Wing 1, Lant

White, N. V., from FASRON 52 to MAW-3

Ziegler, J. E., from AMAL Johnsville, Pa., to CVG-3

Lieutenant, junior grade (MC)

Kelly, G. F., (orders to report to Heavy Attack Wing 1, Lant cancelled)
from SAM to FASRON 821

Waldo, R. F., (orders to U.S.S. Rendova (CVE-114) cancelled) from SAM
to NS Kwajalein, M.I.

Wilkinson, E. L., from SAM to Naval Hospital, Pensacola, Fla.

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Defects Noted on SF-88's Submitted to BuMed:
December 1952 and January 1953

Omissions	250
Excess copies	542
Lack of copies	60
Carbon copies not legible	35
Carelessness in recording results	43
Failure to state flight status (Item No. 17)	102
Flight time omitted	79
Not fully explaining dental defects of NavCad applicants	24
Not recording C. E. R. and improperly placing pulse in spaces	12
Refractions not properly recorded	19
Not leaving right side in column 73 for BuMed endorsement	56
Failure to state aviator's service group in recommendation	66
No reason given for hospitalization	12
Not clarifying or going into enough detail regarding medical defects ..	14
Failure to mention disqualifying defects on SF-89 (Medical History Sheet)	117
Failure to submit SF-89 (Medical History Sheet)	13
Omissions on SF-89 (Medical History Sheet)	20

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Flight Surgeons' Participation in
Fifth Annual Naval Industrial Health Conference

Attention of Flight Surgeons is invited to the Fifth Annual Naval Industrial Health Conference which will convene at the Statler Hotel in Los Angeles Apr. 18-23, 1953. Registration is on 17 April. Attendance of Flight Surgeons at this conference is regarded as extremely desirable in order to acquaint them with the many problems of industrial health encountered at large naval air installations, as well as to give them the opportunity for the excellent training provided. Of particular interest to the aviation medicine group will be the parts devoted to problems of hearing and hearing testing procedures. This ties in very well with the high-intensity noise problem mentioned elsewhere in this issue of the News Letter. Of interest also to Medical Officers of Air Stations having civilian employees in the overhaul and repair establishment is the program having to do with the taking of routine audiograms on all naval Civil Service personnel. Taking part in the Audiology Symposium will be Dr. Gordon Hoople, Professor of Otorhinolaryngology, University of Syracuse, who will speak on the history of this problem; Dr. Howard P. House, Professor of Otorhinolaryngology, University of Southern California, speaking on the anatomy and physiology of hearing; Dr. C. Stewart Nash, Professor of Otorhinolaryngology, University of Rochester, speaking on industrial hearing

loss and its medico-legal implications; Dr. Aram Glorig, of the U. S. Army Speech and Hearing Center, Walter Reed Medical Center, speaking on hearing testing procedures for industrial needs; and Dr. Douglas E. Wheeler, of the Committee on Noise in Industry of the American Academy of Ophthalmology and Otolaryngology, who will speak on field reports on hearing. In addition, a considerable portion of the audiology session will be devoted to indoctrination and training in proper audiometric procedures and in noise-level measuring techniques. This program will provide an excellent review of audiology and hearing problems which should be of great value to all medical officers concerned with civilian personnel of the industrial establishment of the Navy.

In addition to the audiology program, there will be sessions on toxicology with particular attention to those problems peculiar to aviation such as fuel, lubricants, fumes, exhaust, and solvents encountered in overhaul and repair facilities. Finally, the general orientation in industrial medical problems including civilian O and R procedures should make attendance at this meeting very much worthwhile. It is desired that Senior Medical Officers of aviation activities avail themselves of this opportunity for training in industrial medical problems for themselves and/or representatives from their activities.

Requests for orders to attend this conference should be made to local commands.

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Permit No. 1048

OFFICIAL BUSINESS

WASHINGTON 25, D. C.

DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300